

REMARKS

The Examiner's comments together with the cited references have been carefully studied. Favorable reconsideration in view of the foregoing amendments and following remarks is respectfully requested.

Claims 1-15 and 17-29 were previously pending in the application. Claims 3, 6-14, and 25-28 were withdrawn from consideration. Claims 1, 2, 4, 5, 15, 17-24, and 29 have been rejected. Claims 2-4, 6-14, 16, and 25-28 have been canceled, including all of the withdrawn claims. Claims 1 and 5 herewith are amended. New claims 30 to 31 have been added. Claims presently active, therefore, are claims 1, 5, 15, 17-24, and 29-31. Favorable reconsideration of the application in view of the following remarks is respectfully requested

Claims 1, 2, 4, 5, 15-24 and 29 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Ilda et al. It is the conclusion of the Examiner that Ilda et al. disclose a porous resin film as the surface layer on a base material and discloses a surface oxidation treatment of the film or the laminate, including corona treatment.

This rejection is traversed. The independent claims have been amended to require that the present porous image-receiving layer comprises an open-cell voided polymeric film substantially comprising poly(ethylene terephthalate) polyester. Ilda et al. describe the porous resin film as a mixture of a thermoplastic resin and a hydrophilic resin and a fine inorganic or organic powder (paragraph 0053). Ilda et al. provide a long list of non-hydrophilic thermoplastic resins in paragraph [0055], including polyethylene-based resins, polyolefin-based resins, polycarbonates, polystyrene, polyphenylene sulfide, as well as polyethylene terephthalate and polyester-based resins in general. However, Ilda et al. state: "In particular, ethylene-based resins or polyolefin resins, such as propylene-based resins, are preferred...." (paragraph 0056). Moreover, all the actual examples in Ilda et al. are based on polypropylene and polyethylene.

Although Ilda et al. do not plasma treat the surface of any inkjet receiver in any actual example, Ilda et al. state as follows:

The porous resin film according to the present invention or the laminate containing the same may be subjected to a surface oxidation treatment, if necessary. The surface oxidation treatment sometimes contributes to the improvement in the surface hydrophilicity and absorption properties or improvement in the application properties of the ink-receiving layer or the adhesiveness to the porous resin film. [emphasis added]

Thus, it appears that the presence of the hydrophilic polymer in Ida et al. may not provide sufficient hydrophilicity and further hydrophilicity is sometimes obtained by plasma treatment.

In contrast, the present invention is directed to improving dot spread during inkjet printing on inkjet media. Applicants observed that for many porous inkjet receivers, there is very little dot spread when printing with pigmented inks. As a result, banding artifacts as well as reduced optical densities occur. These problems could be minimized by increasing to some extent the dot spread of the printed ink.

Applicants found that plasma treatment of the surface of porous receivers prior to printing did not in general significantly increase the dot spread when printed with pigmented ink. Unexpectedly, however, Applicants found that plasma treatment of porous receivers comprising an open-cell voided polymeric film substantially comprising poly(ethylene terephthalate) and containing greater than 40% elemental carbon at the surface did result in significantly increased dot spread and higher print densities. In particular, when Receiver 2 described in the Examples was plasma treated, an average cyan dot area of $9771 \mu\text{m}^2$ and a 50% cyan density of 0.53 was obtained, as shown in Table 2, page 20 of the present application. These results represent, respectively, a +19 percent and a +8 percent improvement due to the plasma treatment.

In contrast, the experimental results in Table 2 of the present application show that plasma treatment of Receiver 1, which instead comprised a polyolefin-based top layer like in Ida et al., resulted in significantly lower average cyan dot area ($4055 \mu\text{m}^2$) and significantly lower 50% cyan density (0.32) than obtained using the open-cell voided poly(ethylene terephthalate)-based film of the present invention. Thus, the use

of plasma treatment according to the present invention to improve dot spread shows both significantly unexpected improvement and superior results using the poly(ethylene terephthalate) film of the present. Moreover, the present invention does not require the presence of a hydrophilic polymer such as required by Ilda et al.

As indicated above, Claim 1 has now been amended to clarify that the inkjet recording element comprises a porous image-receiving layer wherein the porous image-receiving layer before plasma treatment contains at least about 40% elemental carbon at the surface, wherein the porous image-receiving layer comprises an open-cell voided polymeric film substantially comprising poly(ethylene terephthalate). Support for this amendment is to be found in the original claims 2 and 4. Claim 2 has been amended to require that the open-cell polymeric film consists essentially of poly(ethylene terephthalate) voided by organic or inorganic particles, as supported on page 6, lines 27-19.

In view thereof, it follows that the subject matter of the claims would not have been obvious in view of Ilda et al. at the time the invention was made.

Applicants have reviewed the prior art made of record and believe that singly or in any suitable combination, they do not render Applicants' claimed invention unpatentable.

In view thereof, it follows that the subject matter of the claims would not have been obvious of Ilda et al. at the time the invention was made.

In view of the foregoing remarks and amendment, the claims are now believed allowable and such favorable action is courteously solicited.

Should the Examiner consider that additional amendments are necessary to place the application in condition for allowance, the favor is

requested of a telephone call to the undersigned counsel for the purpose of discussing such amendments.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'CPK', is written over a horizontal line.

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